



We transform chemistry



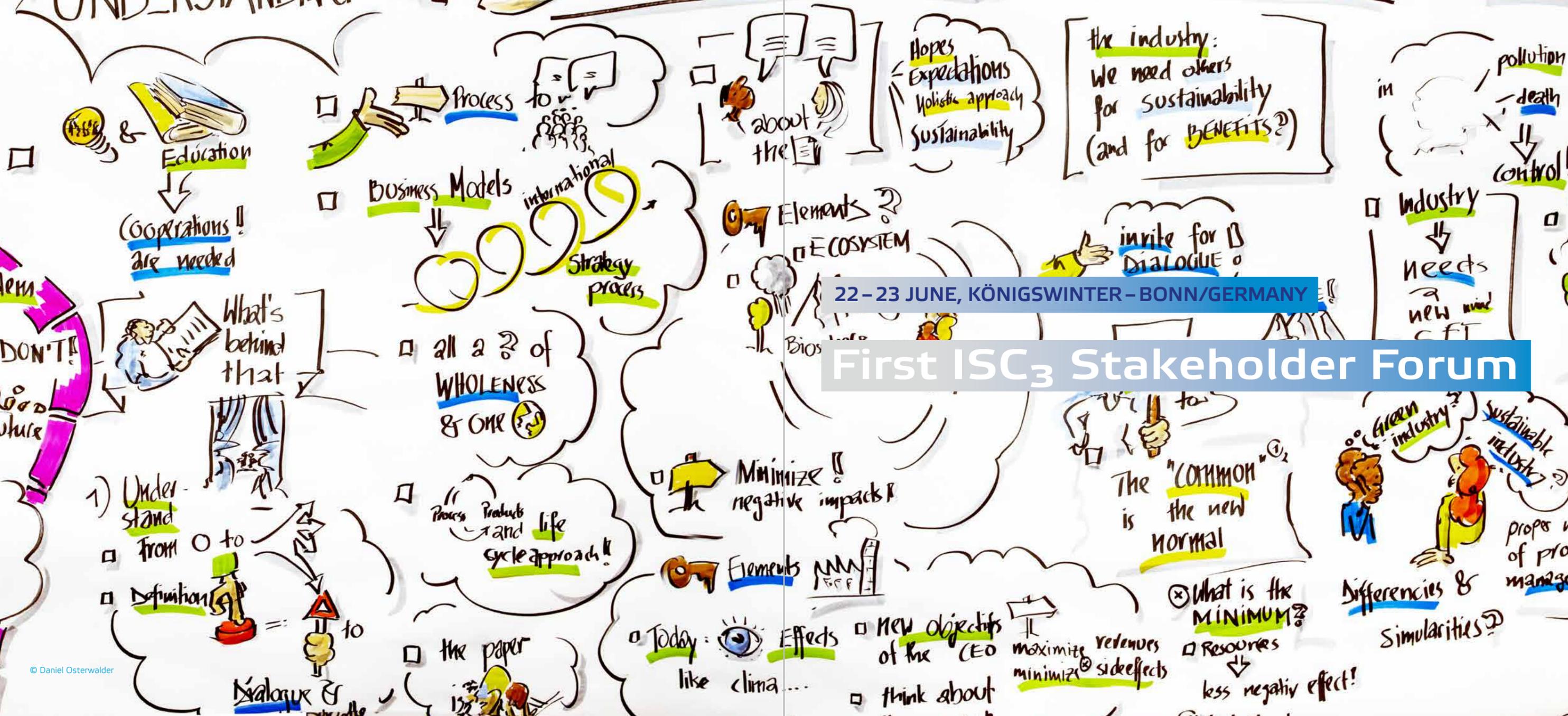
A COMMON UNDERSTANDING



1st ISC3

STAKEHOLDER FORUM

International Sustainable Chemistry Collaborative Centre, Bonn 20-21 June, 2019





The ISC₃ Stakeholder Forum – a new platform for the dialogue on Sustainable Chemistry

As a globally acting collaborative centre, the ISC₃ contributes to the transformation of chemistry towards sustainability in cooperation with stakeholders. The Stakeholder Forum is one of the key elements of the ISC₃ stakeholder engagement. The Forum offers a platform to share ideas, engage in the transformative agenda of the ISC₃ and build up an international Sustainable Chemistry Community. The first ISC₃ Stakeholder Forum took place in Königswinter/Bonn in Germany, introducing the participants to the work programme of the ISC₃, and inviting them to engage in the dialogue on sustainable chemistry. Nearly 110 Stakeholders from industry, academia, governments, NGOs and IGOs from Europe, Africa, Asia as well as North- and South America took the opportunity to exchange experiences, insights, and expectations, sharing and exchanging perspectives and opinions on sustainable and green chemistry. This report documents the input the participants kindly shared with the ISC₃ during two labour-intensive and fruitful days.

With the emerging concept of sustainable chemistry, the International Sustainable Chemistry Collaborative Centre (ISC₃) aims to promote a new system thinking approach in the chemical sector. The concept focuses on the entire life cycle of products and offers an oppor-

tunity to move entire supply chains towards sustainable circular economy models. The holistic approach promotes the use of environmentally and socially friendly alternatives, and offers new business opportunities, especially for entrepreneurs and start-ups. According to the UNEP report "Analysis of Stakeholder Submissions on Sustainable Chemistry Pursuant to UNEA Resolution 2/7", sustainable chemistry has the potential to contribute to achieving at least 12 out of 17 UN Sustainable Development Goals (SDGs). Delivered at scale, sustainable chemistry solutions can provide important contributions to achieving the SDGs as well as to the sound management of chemicals and waste.

The ISC₃ Stakeholder Forum invited stakeholders from different sectors to engage in an inter-disciplinary dialogue on the emerging concept of sustainable chemistry, offering a platform to voice expectations, ideas and concerns. Opening the floor to a broad discussion on the concept as well as on the activities needed to promote transformative action, the forum provided a broad range of dialogue formats to share experiences, co-create ideas and interconnect the manifold ways of promoting sustainable development in the chemical sector and beyond.

Day 1 “Mission Sustainable Chemistry”

The first day of the Stakeholder Forum opened with a directors' dialogue under the motto “Sustainable Chemistry – Our Mission at the ISC₃”. Friedrich Barth, Managing Director of the ISC₃ Headquarter, Dr. Andreas Förster, Director ISC₃ Innovation Hub and Prof. Klaus Kümmerer, Director ISC₃ Research & Education Hub, presented the vision and mission of the centre and discussed how the ISC₃, as a new international centre for sustainable chemistry, contributes to sustainable development. Andreas Förster and Klaus Kümmerer introduced the participants to the goals and core activities of the ISC₃ Hubs; the Innovation Hub hosted by DECHEMA e.V., with the Global Start-up Service, and the ISC₃ Research & Education Hub, hosted by Leuphana University, with the Master programmes and the research agenda. The directors closed the dialogue with a personal statement, expressing their dedication to sustainable chemistry as a driver of sustainable innovation and an essential contribution to the UN Sustainable Development Goals.

The discussion on the emerging concept of sustainable chemistry, as the focus topic of the first day, was opened through a panel discussion highlighting different perspectives and expectations. The panel featured

members of the ISC₃ Advisory Board: Dr. Sam Adu-Kumi, Chemicals Control and Management Centre Ghana; Dr. Pierre Barthelemy, CEFIC; Rebecca Freitag, Youth Delegate to High-level Political Forum on Sustainable Development at the United Nations; and Elsbeth Roelofs, MVO Netherlands. The panellists gave their specific expectations towards the emerging concept of sustainable chemistry, highlighting important elements to be integrated into a common understanding of the concept. They stressed the opportunities that come with sustainable chemistry innovation as a driver of entrepreneurship in developing countries while underpinning the growing commitment of the private sector towards the SDGs. Furthermore, the panellists called for a holistic approach with an emphasis on environmental aspects and expressed their hopes for a better future through a bold commitment to sustainable chemistry as a new leading concept.



Panel discussion with (f.l.t.r.) Dr. Hannah Büttner (facilitator), Elsbeth Roelofs, MVO Netherlands, Dr. Pierre Barthelemy, CEFIC, Rebecca Freitag, Youth Delegate, Dr. Sam Adu-Kumi, Chemicals Control and Management Centre Ghana



“Towards a Common Understanding of Sustainable Chemistry”

The emerging concept of sustainable chemistry calls for the development of a common understanding of its objectives and key elements. As a collaborative centre for sustainable chemistry, the ISC₃ has therefore initiated a dialogue process, inviting stakeholder from all relevant sectors to engage in the endeavour. Based on the ISC₃ thought-starter “Towards a common understanding of sustainable chemistry” the first round table dialogue of the Stakeholder Forum was dedicated to the discussion on the expectations towards sustainable chemistry and key elements of a common understanding.

The thought-starter “Towards a common understanding of sustainable chemistry” is available at the ISC₃ webpage. The thought-starter was submitted to the SAICM process as part of the INF doc “Reaping the full potential of sustainable chemistry for SAICM, the Sound Management of Chemicals and Waste beyond 2020” (Open-Ended Working Group III, Strategic Approach to International Chemicals Management (SAICM) beyond 2020).

The round table dialogue invited the participants to share views, highlight different positions and expectations on the objectives of sustainable chemistry and discuss key elements for a common understanding, thus jointly shaping the emerging concept. The lively discussion was facilitated by the ISC₃ team and encouraged a cross-sectoral open debate.

The dialogue was structured along the following three guiding questions to the participants:

1. What are the key elements to describe sustainable chemistry?
2. What are the specific expectations of the private sector, and what defines sustainable chemistry from the perspective of the public sector, of academia and NGOs?

3. How can the different expectations be brought together in a “common understanding”?

Bringing together the views of more than 100 experts from different world regions and sectors, the round table discussion inspired a broad panorama of different aspects and priorities regarding the development of a common understanding of sustainable chemistry. For each table, the results of the dialogue were noted, and key findings shared in a final plenary discussion.

To allow an overview of the results and enable the further development of a common understanding, the contributions of the participants during the discussion are presented in thematic clusters in this documentation. Identical or similar comments have been summarized and reported below under different key elements.

General comments on developing a Common Understanding of Sustainable Chemistry

The ISC₃ thought-starter “Towards a common understanding of sustainable chemistry” provided an initial starting point for the discussion. With a first draft of key elements and objectives based on the assumption that sustainable chemistry is a holistic approach and calls for a new system thinking along the life cycle of chemical products, the paper was welcomed by the participants. The idea of understanding sustainable chemistry as an approach which encompasses the three dimensions of sustainable development and sets a focus on product life cycle assessment, supply chain management and circularity, received an overall positive feedback.

During the round table dialogue, numerous stakeholders agreed that the emerging concept of sustainable chemistry requires a cross-sectoral learning process and stressed that the development of a common understanding should be open to new insights. The concept still needs to be explored and should be further developed as the scientific knowledge and the practical experiences keep growing.

Beyond the more general remarks on the thought-starter, the round table discussion brought up a broad range of topics for further consideration in the development of a common understanding as well as questions that need to be answered.

The remarks and recommendations of the participants on the common understanding of sustainable chemistry can be found below.

General remarks on developing a Common Understanding of Sustainable Chemistry

Stakeholder remarks on the key element “innovation”:

Given that it is not possible to create “no impact” technology or take “no impact” action, the aim of sustainable chemistry should always be to develop innovative, non-toxic, non-polluting chemicals in a chemical circular economy which considers the preservation of raw materials and their recycling, the minimal impact on ecosystems, resource management, a sound understanding of risks, hazards, exposure and disposal thanks to education and transparent information.

Stakeholder remarks on the key element “capacity building”:

There is a need to implement capacity building programmes in emerging economies (education programmes in schools and universities, but also for government staff), and the need to mainstream the benefits of sustainable chemistry in terms of functional equipment, implementation of technologies. The creation of jobs has been identified as a crucial topic, especially for developing countries.

Stakeholder remarks on the key element “assessment”:

All stakeholders agreed on the urgency of setting out methods and tools to evaluate and assess sustainability (e.g. Life Cycle Assessment (LCA)) at different levels to compare different solutions. The Common Understanding should state the requirements needed to fulfil the SDGs.

Stakeholder remarks on the topic of “language”:

A common understanding needs an inclusive language to mobilize and motivate participation at a global and local level. The ISC₃ should use a more specific language to better address sectors’ and stakeholders’ needs.

Stakeholder remarks on the topic of “communication”:

Global communication activities with positive and negative narratives about sustainable chemistry would be helpful - including the communication of case studies exemplifying activities. An important instrument for the implementation of sustainable chemistry would be the communication of best practises and success stories which would create the necessary awareness to gain acceptance for sustainable chemistry innovative solutions. Also, global information campaigns with a broad media support to inform the public opinion could be a powerful tool to get a broader consensus among stakeholders quickly. Therefore, a more comprehensive communications strategy is needed, targeting all relevant stakeholders, including SMEs and retrofits.

The mission of transforming chemistry could be summarized into a simple but powerful message “We transform chemistry for ...”, e.g. for and/or with society. Once a global vision is formulated, a mapping should be created to inform where initiatives are implemented and at which level (international, regional and local level) and where inaction takes place. Consumers should have access to material sheets and production processes data to be fully aware of the impact their choices imply and to act well-informed about the products they use.

Stakeholder remarks on the topic of “target groups”:

Currently, the discussion about sustainable chemistry (and sustainability in general) is made by/for researchers, academics, industries etc. However, users, consumers, policymakers, start-ups, investors, SMEs and retrofits are also relevant stakeholders who should be targeted.

Key Messages from the discussion on the guiding questions

1. Regarding the question “What are the key elements to describe sustainable chemistry?” the following considerations were made:

SC (sustainable chemistry) is seen as a shifting paradigm, a learning process, or a process of continuous improvement, or a vision. According to some participants SC should be understood as a tool that serves for reaching a global goal, e.g. “a side-effect-free chemistry”. Based on a common understanding, it was suggested that all stakeholders should agree on starting a process to promote chemistry innovation without negative side effects. SC should be understood as a **political forum for debate, empowering people/sectors** to engage in the transformation and become a part of the solution. SC should be regarded as a common responsibility shared by all stakeholders, including industry. That is why policy advising and responsible policymaking, as well as a continuous dialogue among all stakeholders, are the prerequisites to anchor SC in the consciousness of individuals and nations and set up an international agenda at a global level.

It was recommended that SC should focus on three dimensions: the economic dimension (is SC profitable?), the environmental dimension (minimizing hazards and risks) and the societal dimension (especially considering vulnerable groups: workers, women, children, gender). All these aspects should be equally considered. SC should provide clear guidance and ensure information and transparency in decision-making as important cross-sectoral elements. The **three dimensions** of sustainability (economy, society and environment) and close **collaboration** between stakeholders from the private sector, the public sector and civil society would be needed as a driving force in the implementation. In this context, SC should highlight the protection of vulnerable groups as a priority goal and should embrace the Agenda 2030 Commitment: “Leave No One Behind”. Transparency and collaboration are key to combat **child labour and slave work**. According to a stakeholder opinion, due diligence of chemicals producers is needed to achieve the transformation of the

chemical industry. A common understanding should clearly state the reduction of **social inequalities** and the protection of **human rights** among its goals.

It was highlighted that SC could be a driver for innovation worldwide, particularly in developing countries. SC has the potential to contribute to the achievement of the **SDGs and implementation of the international conventions**. It might as well contribute to strengthening the innovation ecosystem and sustainable business models. A common understanding of SC might provide an international framework to guide stakeholders and users. The participants stated that SC could play an important role in tackling the world’s most critical problems by inspiring new partnerships and new value chains. Thus, SC could contribute to the UN call for action to improve living conditions while preserving the planet’s resources and respecting the planetary boundaries.

There was a broad consensus among the participants that SC should be considered as a **holistic approach** that contributes to sustainable development and goes beyond the goal of producing chemicals which are less toxic, thus focussing on the full life cycle of chemical products. An important step towards a holistic approach would be to assess the required function of a product and take alternative solutions into account. Providing an added sustainability value could help to steer away from business models that aim to maximise profit. On the other hand, the participants stated that stigmatisation of chemicals would be contra-productive and need to be prevented, as they play a crucial role in every day’s life. The main problem, according to some attendees in this context, arises from the way how chemicals are used and disposed – especially in developing or emerging countries. That is why capacity building needs to be prioritized by industry and governments.

Many participants agreed that SC encompasses **green chemistry** but goes beyond it by addressing the full life cycle of chemical products, starting with the design and function of a product, to end-of-life and reuse. Through its more holistic approach, SC addresses a large group of stakeholders, including innovators and investors. Green chemistry might be a more focussed approach but should be considered as an indispensable part of SC and not as a separate path.

It was stressed during the discussion that SC should address **prevention** and enhance **transparency** in the full product life cycle. The important question of how



SC can contribute to minimize the harmful impacts of chemicals and prevent hazards from chemical waste should be regarded as a priority.

It was highlighted that SC could help to replace hazardous substances with innovative solutions based on the SC approach. To find better alternatives, SC could help to inspire chemists to think out of the box, including the search for non-chemical alternatives. SC could help to create sustainable substances and materials with as less by-products as possible while **reducing resource and energy consumption. Substitutions based on the SC approach** should be profitable, imply economic benefits and a win-win situation for industry and society, rising profit for companies while decreasing costs for consumers. SC should promote an evidence-based approach in substitution.

Through **innovation**, SC could help to scale up the use of renewable resources, spur up sustainable production, and be a key element to design a circular economy. Furthermore, it could make sure that emerging, and developing countries benefit from know-how and technology transfer. Not only are new innovative technologies needed for implementing SC but also **traditional, indigenous knowledge** should be integrated into the concept of SC as a base for sustainable technologies.

It was mentioned that SC could contribute to finding **better technologies and production processes** based on a reliable framework or standard. SC could trigger a process of changing/replacing technology, equipment, and facilities as well as optimising processes and finding measurable steps to guide this optimisation.

2. Regarding the question *“What are the specific expectations of the private sector and what defines sustainable chemistry from the perspective of the public sector, of academia and NGOs?”* the following aspects were mentioned:



The participants agreed that transparency and knowledge sharing are key elements to promote sustainable development. Collaborative learning processes and co-creation might be more important than the competition to drive the transformation in the chemical sector. The dialogue processes of the ISC₃ could help to enable the much-needed non-competitive formats. By providing a cross-sectoral multi-stakeholder platform, the centre could help to build up a consensus among the different stakeholder groups on the emerging concept of sustainable chemistry.



Specific expectations from attendees from the private sector: Assessment criteria and actions to mainstreaming SC are needed as well as a global framework based on the UN SDGs. If the demand for sustainable chemistry products on the market increases, the private sector will respond accordingly. SC can help to create new business opportunities as well as promote sustainable investment. For a successful implementation of SC, an understanding, dialogue and trust among sectors and stakeholders are crucial. Digitalisation and Artificial Intelligence provide new opportunities to make products and processes more sustainable. Start-ups are key players to transfer sustainable chemistry research and innovation from academia to the industry.

Specific expectations by attendees from the public sector: Young people and entrepreneurs - especially in emerging countries - are often drivers of transformation. To foster their empowerment, transparency and knowledge sharing are needed as well as efficiency and consistency in regulations and collaboration between public and private sector. Extended consumer responsibility would be helpful to promote SC as well as incentivising measurements, green procurement and regulation. Regulatory frameworks, like REACH (European Chemicals Regulation for the Registration, Evaluation and Authorisation of Chemicals) are crucial not only to ensure the sound management of chemicals; regulation is a key driver of innovation and therefore a key element of SC.



Specific expectations by attendees from academia: SC should be understood as a multi-disciplinary approach. Implementing SC in research and curricula requires a new system thinking in chemistry, and a broader understanding of sustainable development, as well as life cycle approaches. SC should be included as a module into the curricula of organic, inorganic and/or analytical chemistry and might even lead to new scientific goals and ethics.

Specific expectations from non-governmental organisations: SC should strongly address human health topics and environmental issues. SC approaches protect users/ consumers and ensure the sound management of chemicals throughout the life cycle as well as the safe and clean re-use of wastes. Education on SC should be available to support a re-thinking of lifestyles and attitudes towards consumption. Producer responsibility should be promoted and include waste minimisation and circularity.

3. Regarding the question *“How can the different expectations be brought together in a “common understanding”?”* the following aspects were mentioned:

With regard to the question, what it would take to align perspectives and experiences from different sectors, the participants underlined the need for an open debate. Expectations need to be identified and described according to the specific sectoral language. This exercise would provide the stakeholders with a clear “map” to work on. Furthermore, to align positions, transparency and trust among the different sectors as well as knowledge about differences, similarities and linkages are important. Without a shared understanding on sustainable chemistry, the term might be used with very different objectives and connotations, including the misleading use for green-washing.

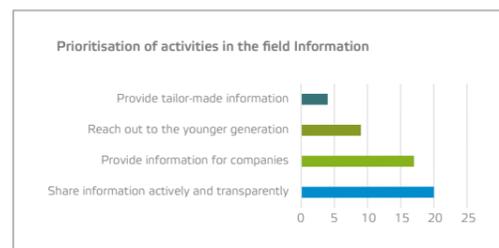


New partners in Africa, Asia and Latin America joined the Spiderweb Network of the ISC₃

During the Stakeholder Forum, the ISC₃ signed three Memoranda of Understanding (MoU) with organisations from Africa, Asia, and South America. The new partners of the ISC₃ are: The National Agency for Research and Innovation of Uruguay (ANII), the Green ChemisTree Foundation (India), and the Egyptian social enterprise Youthinkgreen. The organisations agreed to cooperate and support sustainable chemistry innovation by setting up joint activities in the respective regions. All of them joined the global ISC₃ Spiderweb Network of the Global Start-up Service, created by the ISC₃ Innovation Hub, to support entrepreneurs at every point in the innovation chain.







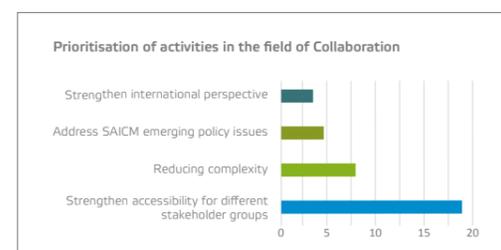
Stakeholder remarks and recommendations regarding the activity field Information



Regarding the activity field “Information”, the participants called for **active and transparent information** on sustainable chemistry that should be accessible to a broad range of stakeholders. **Communication and dialogue with stakeholders in all world regions** were considered essential to achieve the mission of the ISC₃. To reach stakeholders in all world regions, the participants recommended workshops in different languages. The **private sector** was considered a highly relevant target group. Companies should be addressed by the ISC₃ with information on sustainable chemistry. The participants called for information not only for experts but also for the general public as well as outreach to the media.

Relevant communication topics according to the stakeholders are product information, including the ecological footprints, alternatives for chemical products and information on the sound use of chemicals. They encouraged the ISC₃ to initiate a discussion on the “life cycle of products” as well as “the positive and negative effects of a transformation towards sustainability”. They further advised to **provide tailor-made information** on a local, regional and global level as well as a clear, broadly accepted definition of sustainable chemistry.

It was emphasized that awareness-raising and education about sustainable chemistry should **address the younger generation**, starting at an early age.



Reaching out to young chemists and researchers and engaging them in the dialogue on sustainable chemistry is therefore seen as an important task for the ISC₃.

General remarks and recommendations on the ISC₃ working programme

ISC₃'s working programme is perceived as very broad with its five activity fields collaboration, innovation, education, research and information. This approach allows for many different stakeholder groups to get involved and build up a cross-sectoral, international community of like-minded institutions and experts. Furthermore, it promotes the transformation in the chemical sector and beyond on different levels. To ensure that the activities are well-targeted, and resources efficiently used, participants recommended to develop long-term goals and indicators to measure

the impact of the ISC₃ activities. Flagship projects and cooperation with well-established institutions might be helpful to achieve high visibility while ensuring resource efficiency and effectiveness. It was suggested that the ISC₃ should establish a learning process to ensure focus and impact orientation of its activities.

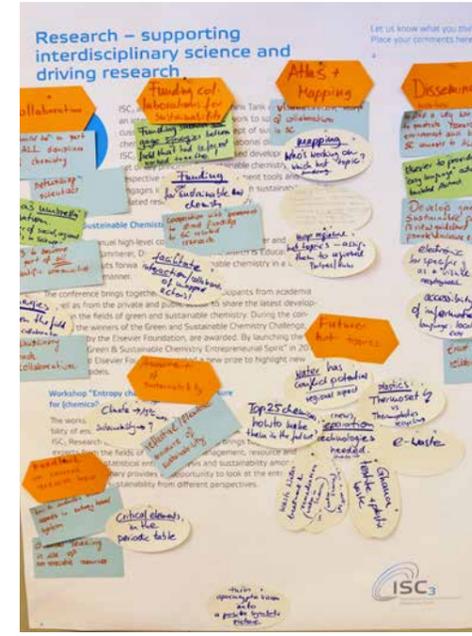
With regard to the complexity of the transformation towards sustainability in the chemical sector and beyond, the stakeholders called for approaches that help to reduce complexity and ensure accessibility for different stakeholder groups. This includes transparent ways of stakeholder engagement and cooperation with partners.

Many participants see the ISC₃ in a unique position as platform for collaboration, providing a new opportunity to engage stakeholders from all relevant sectors. Furthermore, ISC₃ could help to overcome the negative image of chemicals by providing a new, positive narrative of chemistry as a solution provider for sustainable development. Communicating best practices and success stories, for example from the ISC₃ start-up programme, could help to increase awareness and understanding of the opportunities that come with sustainable chemistry innovation.

Open Forum: Sustainable Chemistry presented by the participants

During an Open Forum, participants were invited to give short pitch presentations to share information among the attendees. A broad range of projects in the field of sustainable chemistry were presented, touching upon innovation, education, research and many other topics. Examples for the pitch presentations are: presentations by start-ups, showcasing an innovative approach to bleach jeans without hazardous chemicals, as well as a block chain-based model to share innovations in a safe space. Short introductions to an incubator and the entrepreneurship days in Germany were given as well as to the programme of the leading

accelerator in Chile. Further presentations touched upon education on green chemistry and brought up an inspiring project in Nigeria, showcasing how sustainable chemistry can contribute to the remediation of oil-contaminated soils. Other examples for the diversity of presentations were a short introduction to research activities in Brazil on sustainable chemistry in the field of sustainable agriculture and food processing as well as a brief presentation on green and sustainable chemistry research in Japan. Furthermore, the open forum allowed for a first glimpse on the work of UN Environment regarding the mandate to develop manuals of green and sustainable chemistry and a brief overview on the discussion about sustainable chemistry at the OPCW.



The 1st ISC₃ Stakeholder Forum at a glance

The first ISC₃ Stakeholder Forum provided an opportunity for experts from different world regions to engage in a cross-sectoral dialogue on the emerging concept of sustainable chemistry and the transformative agenda of the ISC₃. Bringing together more than 100 experts on 20 – 21 June, 2019 in Bonn/Königswinter (Germany), the forum allowed not only for fruitful discussions, it proved to be an inspiring network event for the growing international sustainable chemistry community.

The forum evolved around two major topics: the emerging concept of sustainable chemistry and the working programme of the ISC₃, as a contribution to the transformation in the chemical sector and beyond. The first day of the forum was dedicated to the dialogue on a common understanding of sustainable chemistry, gathering different views and opinions on the emerging concept. The second day moved the dialogue to the working programme, enabling discussions and knowledge sharing on the five activity fields of the ISC₃: collaboration, innovation, education, research and information.

A ceremony to welcome new partners to the ISC₃ network, an open forum session to share information and ideas as well as various networking opportunities were giving additional context to the stakeholder dialogue.

Day 1: “Mission Sustainable Chemistry”

Following the welcoming and introductions, the first day of the Stakeholder Forum opened the floor to a cross-sectoral discussion on the emerging concept of sustainable chemistry. Based on the ISC₃ thought-starter “Towards a Common Understanding of Sustainable Chemistry” the stakeholders joined a round table dialogue, discussing the key elements of sustainable chemistry. Asking for different points of view and expectations towards the concepts, the ISC₃ team invited the participants to develop a joint understanding.

The dialogue brought up a broad range of opinions and gave fruitful insights into international expert knowledge. It became clear that the holistic approach of sustainable chemistry, addressing the triple bottom line of sustainability and the full product life cycle, is widely appreciated among the stakeholders and regarded as an essential and new way of systems thinking in the chemical sector. In this context, many participants agreed that sustainable chemistry embraces green chemistry but goes beyond it by offering an approach that includes social, economic and ethical aspects and is relevant for all sectors and actors producing, using and regulating chemicals. Based on the holistic approach of sustainable chemistry, a broad range of key elements were discussed which should be integrated into a common understanding. One of the most prominent discussion points was the idea that sustainable chemistry is a learning process and needs to be based on the shared knowledge and contributions of actors from all relevant sectors. Furthermore, the participants highlighted the social and ethical dimension that comes with the holistic approach and underlined the importance of the UN Sustainable Development Goals (SDGs) as a leading framework. They called for transparency, capacity building and education as key elements. Innovation and need for guidance and support in this field were identified as further important fields that should be addressed by a common understanding of sustainable chemistry.

Regarding the priorities of the different sectors, the sound management of chemicals and waste and the SAICM emerging policies issues were mentioned as important key elements as well as international conventions and regional frameworks like REACH in the EU. The participants highlighted the opportunities that arise with sustainable chemistry for the private sector, especially new business models that contribute to a circular economy as well as enhanced resource efficiency and substitution. Representatives from academia underlined that the concept needs to be understood as a multidisciplinary approach that goes beyond traditional curricula. Regardless of the specific perspective, the participants agreed that dialogue, collaboration and trust are crucial for the breakthrough of sustainable chemistry.



Day 2: “Transforming chemistry”

On the second day of the forum the stakeholders were invited to reflect upon the working programme of the ISC₃ and engage in shaping the agenda of the centre. The world café dialogue evolved around the five activity fields of the ISC₃: collaboration, innovation, education, research and information.

During the discussion, the participants gave fruitful advice and shared ideas on the activity fields of the centre as well as on the actions needed to promote the transformation in the chemical sector and beyond. It was broadly acknowledged during the discussion that international collaboration among sectors and actors is crucial for the breakthrough of sustainable chemistry. The holistic approach of sustainable chemistry calls for enhanced cooperation and knowledge sharing, putting the ISC₃ as a collaborative centre in a unique position to support this important dialogue.

Regarding the field of innovation, stakeholders agreed on the manifold opportunities that come with sustainable chemistry innovation and called for contributions to build up an international innovation ecosystem, better access to funding as well as visibility and guidance for entrepreneurs. The dialogue on education highlighted the importance of developing a new mind-set and out-

of-the-box thinking in the chemical sector. Furthermore, the participants underlined the need for outreach to the younger generation as well as the long-term goal of making sustainable chemistry education available for everyone. Regarding the research activities, it became clear that sustainable chemistry needs to be integrated into all chemical research disciplines and requires collaboration among scientists as well as substantial funding. Last but not least, the discussion on information shed light on the importance of transparency and knowledge sharing. Calling for active and tailor-made communication, the participants agreed that sustainable chemistry offers the opportunity to develop a new narrative on chemicals as a solutions provider and contribution to achieving the SDGs.

Looking back at the first Stakeholder Forum, the ISC₃ is very grateful for the positive feedback from the participants, the inspiring discussions, the wealth of shared ideas and especially the dedication of the participants to the emerging concept of sustainable chemistry. The ISC₃ team thanks all participants for their attendance, commitment, and valuable remarks and recommendations and looks forward to the future dialogue and collaboration with the growing international sustainable chemistry community.

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